

What is claimed is:

1. A record medium for recording a program that causes an information apparatus to accomplish
5 a multi-dimensional Fourier parallel processing method for a shared memory type scalar parallel computer having a plurality of processors, the method comprising:

(a) dividing multi-dimensional data to be
10 Fourier transformed into a plurality of two-dimensional data elements corresponding to the number of the processors and storing the divided two-dimensional data elements to secondary cache memories of the processors;

15 (b) causing each of the processors to two-dimensionally Fourier transform the two-dimensional data elements stored in the relevant secondary cache memory; and

(c) repeating the step (b) a required number
20 of times and when necessary, assigning the remaining one-dimensional data elements to each of the processors and causing each of the processors to one-dimensionally Fourier transform the one-dimensional data elements.

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2. The record medium as set forth in claim 1,
wherein the step (b) is performed by causing
each of the processors to bind a plurality of
vectors of the second cache memory in a particular
5 dimensional direction, copy the bound vectors to a
relevant primary cache memory, and successively
two-dimensionally Fourier transform the bound
vectors.

10 3. The record medium as set forth in claim 1,
wherein the multi-dimensional Fourier
transform is a three-dimensional Fourier transform.

4. A multi-dimensional Fourier parallel
15 processing method for a shared memory type scalar
parallel computer having a plurality of processors,
the method comprising:

(a) dividing multi-dimensional data to be
Fourier transformed into a plurality of two-
20 dimensional data elements corresponding to the
number of the processors and storing the divided
two-dimensional data elements to secondary cache
memories of the processors;

(b) causing each of the processors to two-
25 dimensionally Fourier transform the two-dimensional

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data elements stored in the relevant secondary cache memory; and

(c) repeating the step (b) a required number of times and when necessary assigning the remaining
5 one-dimensional data elements to each of the processors and causing each of the processors to one-dimensionally Fourier transform the one-dimensional data elements.

10 5. A multi-dimensional Fourier parallel processing apparatus for a shared memory type scalar parallel computer having a plurality of processors, the apparatus comprising:

a dividing unit dividing multi-dimensional
15 data to be Fourier transformed into a plurality of two-dimensional data elements corresponding to the number of the processors and storing the divided two-dimensional data elements to secondary cache memories of the processors;

20 a two-dimensional Fourier transform unit causing each of the processors to two-dimensionally Fourier transform the two-dimensional data elements stored in the relevant secondary cache memory; and

a one-dimensional Fourier transform unit
25 repeating the two-dimensional Fourier transform a

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required number of times and when necessary
assigning the remaining one-dimensional data
elements to each of the processors and causing each
of the processors to one-dimensionally Fourier
5 transform the one-dimensional data elements.

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